

## Rymer, Edwina

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**From:** Johnson, Ken-E  
**Sent:** Friday, February 06, 2015 3:10 PM  
**To:** Dellinger, Philip;Dorsey, Nancy  
**Subject:** FW: Falloff testing module and some useful SPE papers on injection well operational data analyses

FYI

**From:** Matt Hornbach (b) (6)  
**Sent:** Friday, February 06, 2015 3:00 PM  
**To:** Johnson, Ken-E  
**Subject:** Re: Falloff testing module and some useful SPE papers on injection well operational data analyses

Hi Ken,

This is great. Thanks for sending this.

I have a couple things I need to get off my desk in the next few days, but I will be in touch with you soon. talking with my colleagues this afternoon, they were all very please to learn that you all came to very similar conclusions to us independently regarding relationships between reservoir compressibility with time and EQ activity at several of these sites.

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On Fri, Feb 6, 2015 at 1:35 PM, Johnson, Ken-E <[Johnson.Ken-E@epa.gov](mailto:Johnson.Ken-E@epa.gov)> wrote:

Matt – Thanks for your interesting presentation this morning. I’ve inserted the link to EPA’s falloff testing module below as well as a list of useful SPE papers on injection well operational data analyses:

<http://water.epa.gov/learn/training/dwatrainig/upload/dwaUIC-fallofftestingnutsandbolts.pdf>

<http://water.epa.gov/learn/training/dwatrainig/upload/dwaUIC-introtoUIC.pdf>

A few useful SPE and other reservoir engineering papers:

- 1) Hall, H.N., October 1963, World Oil, “How to analyze waterflood injection well performance”
- 2) Izgec and Kabir, SPE Paper 109876, February 2009, “Real-Time Performance Analysis of Water-Injection Wells”
- 3) Izgec and Kabir, SPE Paper 123930, February 2011, “Identification and Characterization of High-Conductive Layers in Waterfloods”

- 4) Silin et al, SPE Paper 95685, October 2005, “Waterflood Surveillance and Control: Incorporating Hall Plot and Slope Analysis’
- 5) Silin et al, SPE Paper 93879, March 2005, “Monitoring Waterflood Operations: Hall’s Method Revisited”
- 6) Buell et al, SPE Paper 16963, 1990, “Analyzing Injectivity of Polymer Solutions with the Hall Plot”

Many other engineering reference papers are listed in the seismicity report, but these should get you started. You can search for SPE papers at the One Petro online library.

Hope this information proves helpful.

Ken Johnson, P.E.

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